



SOULMATE Deliverable 3.2a

Initial Design Testing Results

Project number: AAL-2017-023

Date: March 31, 2019

Level: Restricted

1. Introduction

In the SOULMATE project, a highly innovative, multi-suite travelling companion will be developed for the target group of older adults. This innovation will be based on existing mobile services, focused on route planning, route navigation, route training, and emergency help during trips, that are offered by the SME's that participate in the SOULMATE project. The goal of this deliverable is to present the results that have been gathered through initial design testing workshops with future end-users.

These design testing sessions aim to establish end-user preferences in terms of the design of the SOULMATE service. To gather tangible feedback from these end-users, a click-dummy was created as an early trial version of the application. This click-dummy contains a series of potential screens that display different aspects within the application, which can be navigated through simple taps on the screen. The click-dummy therefore feels similar to an actual application but with static, pre-set screens. Using this click-dummy, the focus of the gathered feedback lies on how intuitive and aesthetically pleasing these screens look. Important aspects include the position and size of buttons to press, the size and phrasing of labels and how intuitive sequences of screens are.

This document is the first part of deliverable 3.2 testing & field trials results. Deliverable 3.2 Testing & field trials results will consist of two main parts.

- Part A: Initial design testing results,
- Part B: Initial functional testing results,
- Part C: Field trials.

This deliverable builds forth on D3.1 in which the overall testing and trial methodology of the SOULMATE service is described. The click-dummy used in this phase is based on earlier co-creation sessions detailed in deliverable D1.3. The results of the design testing workshops are gathered and reported here, as part of the initial testing phase of the project. The results of this deliverable will therefore provide direct input for 1) the graphical design of the SOULMATE service, 2) the different evaluations that will be conducted within the project, and 3) methodological feedback that can be used in the set-up of the functional testing workshops; the next stage of initial testing.

Section 2 will shortly set out the methods used to set-up the design testing workshops and gathering of feedback, followed by Section 3, in which the results of these activities will be discussed. To conclude, Section 4 provides some guidelines for the graphical design of the SOULMATE service, which can be used to guide the application design specifically for our intended end-users.





2. Initial Design Testing Methods

In the initial testing phase, early versions of the SOULMATE application will be tested by a small group of motivated end-users in each of the three participating countries. In iterative loops, the design and functionality of the service will be tested and discussed by these end-users in order to shape the development of a solution they want and need. The initial testing phase will be split up in two stages; design testing and functional testing. Both stages will require extensive discussion and feedback of a select group of end-users. Selection of these elderly needs to be done carefully, based on the probability that end-users are capable of carrying out pre-set scenario's and deal with bugs and uncertainty in the solution; have the ability to give extensive verbal feedback and are cognitively able to reflect on their interaction with the solution. A match between the module to be tested and the specific needs of the test user will be sought for to produce relevant feedback. In addition to using the same selection criteria, the two stages of initial testing will also use the same set-up. These testing sessions will be (estimated) half-day workshops in a place that is familiar to the end-users (e.g., the office of an end-user organization) in small groups of 5 at a time. In these workshops the end-users are first introduced to some part of the SOULMATE service and then interact with it in a structured way. After these interactive sessions, participants will be asked to challenge the limits of the current version and provide feedback on the strengths and issues of this version of the application. TU/e and RRD have developed a structure for the initial testing and contact moments with the end-users which will guide the end-user organization during the meetings with the end-users. Feedback and outcome of the initial tests will be analysed and summarized by TU/e and RRD.

Here, the design of the SOULMATE solution will be reviewed. These design sessions have used a click-dummy version of the application. A click-dummy displays a sequence of static screens that can be navigated simply by tapping the buttons, thus creating a trial experience that feels like an actual application. See Appendix A1 for some screenshots of the available click-dummy. As workshops are being conducted in different countries, the click-dummy and all other materials (e.g., feedback forms) have been translated from English to German and Dutch. The design testing sessions have focused on how the solution looks and feels to the target audience. Design includes aspects such as position and size of buttons, phrasing of labels, and intuitiveness of screens and sequences. For the full structure of the design testing workshop see Appendix A2. In general, the workshops have spanned half a day. During this time, end-users have been introduced to the aim of the SOULMATE solution in general and the current click-dummy more specifically. To guide participants through the click-dummy, several scenarios have been set-up. Starting with a full step-by-step direction on what to do, these scenarios continuously decrease in the amount of specific instructions they give. This way, participants get more freedom and responsibility to figure out how to complete the scenario as they get further down the list. Eventually, the end-users should run into most issues of unintuitive menus and button placements as they try to figure out what to do. Of course, the workshop organizer was always present to assist the participants and avoid potential frustration. Near the end of the workshop, written feedback on the design of the click-dummy was asked from participants. A short questionnaire was designed to guide end-users in giving this feedback (see Appendix A3), including some quantitative (ratings) and qualitative (aspects and suggestions) items. These questions were further discussed during the workshop, to allow the end-users to expand on their answers further and weigh different opinions.



3. Initial Design Testing Results

As the workshop protocol and feedback forms show, three different kinds of results are being collected during the Initial Design Testing workshops. First, there are several closed ended questions to get an overall rating of the look and feel of the application’s design. Then, there are several open ended questions in which participants could voice their opinions on general aspects of the click-dummy and the specific scenarios. Finally, general sentiment and workshop discussion points have been collected by the workshop coordinators.

In terms of participation, the workshop in Belgium included 5 participants, while the workshops in the Netherlands and Austria each included 7 seniors. General results will be discussed, as well as data per country.

Closed ended questions

Table 1 shows the average scores given to the closed questions on the feedback form. Each closed ended question could be answered on a 5-point scale, with answering options ranging from ‘very negative’ (e.g., very ugly, very unintuitive) to ‘very positive’ (e.g., very pretty, very intuitive). The average score on the intuitiveness and ease of use of the click dummy is 4.2 (out of 5) which translates to pretty intuitive. The design is given a score of 4.2 which indicates the design is liked by the participants of the workshops. All the answers given to the question can be found in Appendix B Results closed ended questions .

Table 1 Results of closed ended questions, on a scale of 1-5.

	AVERAGE	STD. DEV.	Average BE	Average AU	Average NL
Intuitiveness & ease of use	4,2	1,1	4,2	4,2	4,2
Planning a route	4,6	0,6	5,0	4,3	4,7
Settings & Help	3,5	1,4	4,2	<u>4,0</u>	<u>2,6</u>
Finding the way home	4,2	1,1	<u>3,4</u>	4,1	4,7
Emergency call	4,7	0,8	5,0	4,1	5,0
Finding a restaurant	4,1	1,2	3,4	4,6	4,2
Design	4,2	1,0	4,2	4,3	4,1
Planning a route	4,6	0,6	4,4	4,7	4,6
Settings & Help	3,8	1,0	4,0	4,1	<u>3,4</u>
Finding the way home	4,0	1,0	<u>3,4</u>	<u>3,9</u>	4,6
Emergency call	4,7	0,9	5,0	4,9	4,3
Finding a restaurant	4,1	1,0	4,2	4,1	3,9

Analysing the scoring of the separate questions shows that the “Finding the way home” is scored lowest both on intuitiveness/ ease-of-use and design by Belgium participants. The scores given by Austrian participant is also below average on this topic. “Setting & Help” scored low in the Netherlands.

Open ended questions

The results of open questions are discussed per question. The answers are categorized, for a full overview of the open questions see Appendix C1-C4. Note again BE: n=5, AUS: n=7, NL: n=7.

Open question 1: Which elements of the design do you like?

	<i>BE</i>	<i>NL</i>	<i>AU</i>	<i>All</i>
<i>Overall design</i>	2	1	4	8
<i>Symbols</i>	1	3	0	4
<i>Colours</i>	1	3	5	9
<i>Fixed frame</i>	1	0	0	1
<i>Font size</i>	0	0	3	3
<i>Button size</i>	0	0	1	1
<i>Button placement</i>	0	0	2	2

The participants mentioned the overall design several times as an element they liked. They specifically liked the colours used in the click dummy, they fit their functions and combine well together.

Open question 2: Which elements of the design don't you like?

.	<i>BE</i>	<i>NL</i>	<i>AU</i>	<i>All</i>
<i>Too much info</i>	3	0	2	5
<i>No. arrows</i>	0	0	2	2
<i>Wording</i>	0	0	2	2
<i>Symbol meaning</i>	0	0	2	2
<i>Font size (too small)</i>	0	0	1	1
<i>Wallpaper</i>	0	0	1	1
<i>Button size (too big)</i>	0	0	2	2
<i>Button size (too small)</i>	0	1	3	4
<i>Contrast</i>	0	0	2	2
<i>Colours</i>	0	0	1	1
<i>Keyboard size (too small)</i>	0	0	1	1

Several participants don't like the amount of information presented on the screens, the number of arrows is specifically mentioned 2 times. The button size (or click area) is mentioned 4 times as being too small, this may result in people pressing the wrong button. The button size is mentioned 2 times as being too big. This is specifically the case for the SOS-button (which people are afraid to accidentally press), and the display of time (which they might find irrelevant to other information on the screen). The symbols are mentioned twice, which indicates that the symbols are not self-explicitary to everyone.

Open question 3: Which elements confuse you?

	<i>BE</i>	<i>NL</i>	<i>AU</i>	<i>All</i>
<i>Multiple routes</i>	1	0	5	6
<i>Symbol meaning</i>	1	2	6	9
<i>How things work</i>	1	1	3	5
<i>Distance display</i>	0	0	1	1
<i>Speed indicator</i>	0	0	1	1

That the symbols are not self-explicatory, can also be concluded from the answers to open question 3. It is not clear if “i”-symbol gives information about the trip, its POI’s, or about the functions of the app. Furthermore, the toilet symbol, star symbol and house symbol (at destination reached screen) are mentioned. The number of arrows mentioned in question 2 corresponds with the multiple route options which remain available during the trip. This is confusing, only the selected route should be indicated (with arrows) on the screen. Furthermore, not for all functions is clear how they work (not intuitive), this can be caused by the colour usage (yellow for calling or hanging-up?) or by the fact that it was a click dummy and not function worked.

Open question 4: How can the design be improved?

	<i>BE</i>	<i>NL</i>	<i>AU</i>	<i>All</i>
<i>Less info</i>	1	0	2	3
<i>More info</i>	3	0	0	3
<i>Possible options</i>	3	1	10	10
<i>Symbol size (bigger)</i>	1	2	2	5
<i>Colour</i>	1	0	1	2
<i>Contrast</i>	0	0	1	1
<i>Symbol meaning</i>	0	0	1	1
<i>Longer time for input</i>	0	0	1	1

The answers to the previous questions in combination with the answers to question number 4 indicate that there is too much information presented at once at the screens. This should be avoided. The requests for more information concern unexpected events, travel time left and more info on a selected POI. Similar to the answers for question 2, these answers indicate that the Symbol (buttons) are too small to see without glasses or press and need to be made bigger. 10 times additional options are mentioned to improve the app, including but not limited to: Voice input, save trips, additional POI, displaying actual weather.

Open question 5,6,7: Regarding the Emergency function

In the Netherlands the participants preferred labelling the emergency button with “Help” and that first the personal contacts are shown and then the emergency services. This is because they are afraid they will call the emergency services by accident. They think the label “Hulpdiensten” is appropriate for this button.

This question was not asked in Belgium. However, during the discussion the topic did come up. Various participants indicated that they have a 112-app on their phone. An added value of that application is that the indicated contact-person is alarmed automatically once an emergency call is made.



Three participants in Austria preferred the label “Hilfe” for the emergency button, three preferred “SOS”, and for one participant it did not matter. 4 of the participants wanted a trusted person on the top of the SOS-contact list, the rest (3) preferred the number of the ambulance to be on top of the emergency contact list. In Austria there are different phone numbers for the different emergency services (in contrast to Belgium and the Netherlands where 112 connects you to all emergency services). For this reason, the question was asked whether the button should say “SOS” or “die Rettung”, 5 participants preferred “die Rettung”, 1 preferred “SOS”, and 1 preferred “SOS”, but only if all emergency services could be contacted using the button.

General discussion of the click-dummy

As part of the workshop, coordinators were asked to guide discussions and take notes on important points. General comments that users made while receiving instructions or other points resulting from discussing the feedback forms could be captured in this way. Summaries of these discussion notes and questions are described below.

NL (Margit Ruis)

Overall, the participants enjoyed seeing what became of their input from the co-creation session and liked having something tangible (the click-dummy!) to talk about. The seniors indicated a preference for an emergency button that says “HELP” instead of SOS. They would like to see their personal contacts first and emergency services after, as they expect to need to call their contacts more often. They are also afraid to accidentally call the emergency services. The name “Hulpdiensten” fit their expectations. An additional point of feedback that keeps coming back but is not necessarily related to design is a voice command function. Participants keep coming back to the convenience of having that available in the application. In this session there was one person who had not experience whatsoever with technology. Even though the workshop coordinator and other seniors tried to help, it is not entirely clear whether they understood the different scenario’s and questions. Additionally, there was not a lot of feedback on the open questions, the seniors found it hard to give written feedback in such an unstructured way. Orally might work better in this case.

BE (Judith Urlings)

There are already a lot of questions among the seniors that were invited. Most these questions are not specifically related to the design but can indicate functional aspects the users are already concerned with. These aspects include battery use of the application, how often it will require updates, the availability of voice commands, the option to save (intermediate) locations for return trips and possible recommendations for ‘eco’ options. For each scenario, some important questions were raised as well. Mentions related specifically to design are italicized, other comments are more focused on function.

Scenario 1:

- Can the route be started from somewhere other than the current location?
- *The differences between main and alternative routes was unclear.*
- What about privacy - What does the application do with location data?
- *Travel time to destination is given before the trip start, but not during.*





Scenario 2:

- There was confusion between the information button “I” and the settings button [gear].
- It was hard for participants to come up with things they would include in settings, fewer options should help with usability.

Scenario 3:

- The icon with every location doesn’t add value; maps can’t be read or recognized on such a small screen.
- In the maps view, the pink-colored arrows get mixed reactions. Some participants state that the contrast is rather low, others compliment the choice of colors.
- Can I enlarge the map? If so, how; by swiping (like Google Maps) or with + and – buttons?
- The special options (restaurant, toilet) in the left border of the screen cause the screen to become crowded very quickly.
- Are there also verbal instructions (e.g., “Turn left”)? These are definitely required in the car or on a bike.

Scenario 4:

- Various participants already had a “112” app on their phone. A potential added value of the application could be that the indicated contact person is alarmed automatically once an emergency call is made.

Scenario 5:

- Easy access to contact details of the restaurants would be nice (e.g., to find opening hours or make a reservation).
- Does the “find a toilet” option include only public restrooms (not very common in BE) or toilets in stores or restaurants as well?
- The contrast between the direction arrows (pink) and the special place arrows (orange) is not clear.

4. Conclusions and Guidelines

Based on the feedback forms and general notes that have been collected during the Initial Testing Design workshops, some conclusions and guidelines can be established. First and foremost the heterogeneity of (even this small) user-group needs to be addressed. While some general trends and feedback points can be distinguished, there are also parts where end-users show contradicting opinions. In general, participants are already pretty fond of the design of the application. Combined over intuitiveness and design, the current click-dummy scored 4.2 out of 5. Especially the general design and colour scheme of the click-dummy were pleasing to the users. Of course, some indications for improvement have been found as well. Both on average and in the number of feedback points, users found the “settings” and “help” functions not very intuitive to use. This coincides with several mentions of the “I” symbol being confusing or in a confusing place on the screen. Additionally, users indicate that some screens contain too much information. The inclusion of several buttons and multiple arrows while making a trip, is a good example of this informational overload, which is mentioned multiple times. Not enough contrast between directional arrows, combined with the overload of information makes the distinction between main and alternative routes hard for participants. Further, there are several mentions of buttons having an unclear meaning or a size that is too small to press or see comfortably. For the emergency-function specifically, Dutch users preferred it to be called “Help” (instead of “SOS”) and to first show a personal contact. Austrian users were divided in their answers, some agreeing with their Dutch counterparts, but others preferring an “SOS” function with emergency services listed first. Another important note from these workshops has been that it is difficult to separate design from function (which can be



hard in general, but specifically for end-users without technical backgrounds). Regarding this, the addition of a speech command function keeps appearing in user-feedback. Although this was not part of the current aim of the workshop and feedback, it bears mentioning.

Based on these results, some general recommendations can be made with regards to the design. First, the “settings” and “help” functions should be straightforward and not include a lot of options or textual explanations. In general, screens should only display limited information at once. Different functional options are nice, but ultimately useless if users cannot find them or do not understand how to use them. When more information has to be displayed on screen, different elements need to be contrasted clearly with each other to increase visibility and intuitiveness of use. Further, buttons should be large enough to press (and not accidentally press something else), and button symbols should be checked (with some end-users) for understanding in the different situations/countries. Finally, in terms of the emergency-function, the users prefer a more casual “Help” function (that calls a personal contact) over a panic “SOS” function that immediately calls the emergency services. However, the situations in which these functions would be used are different (i.e. getting lost vs getting in an accident), which might cause different interpretations of the function. As the general design and colour scheme was found pleasing by most participants, expanding on the current version would be recommended. For specific suggestions and feedback points, we would recommend going through the full feedback notes in Appendices C1-C4.

Concluding:

- General design and colour scheme is liked by end-users;
- Limit the information presented at one time;
- A “Help” function that notifies a personal contact is generally preferred over an “SOS” function that contacts emergency services.





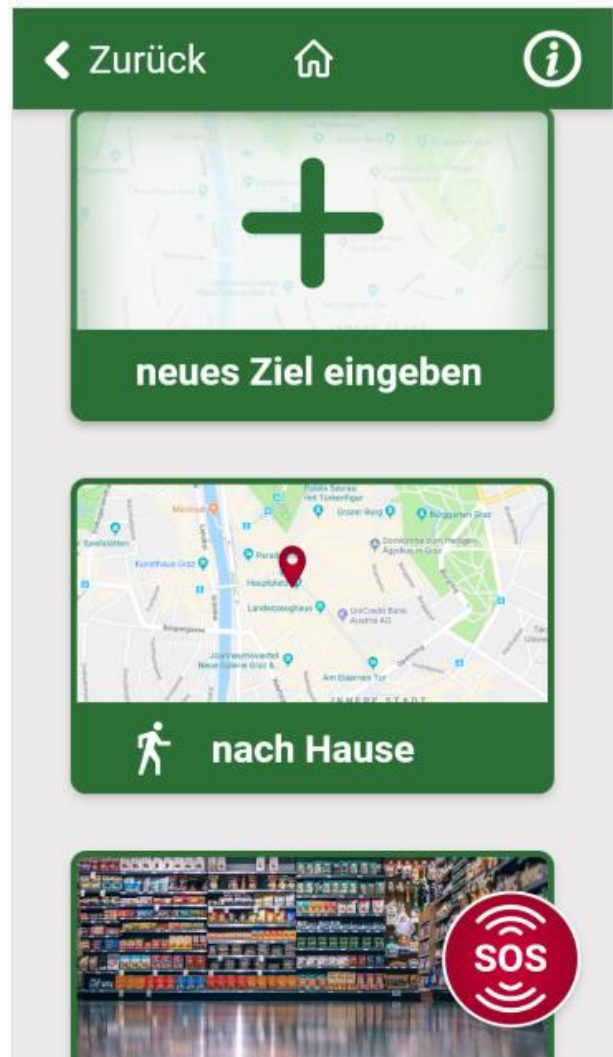
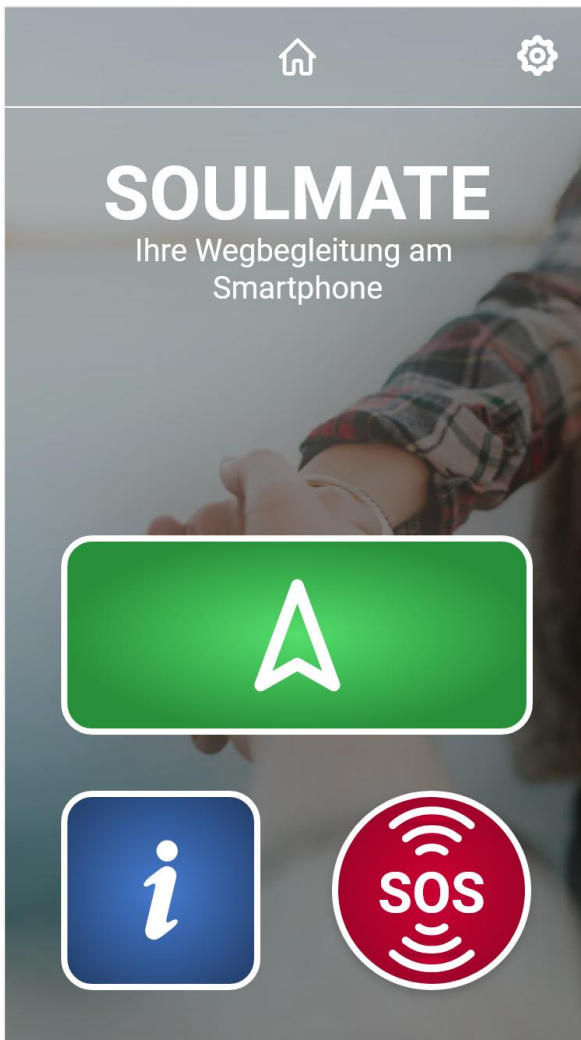
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Appendix A1 Screenshots Click-dummy

(German version)







Appendix A2 Setup Initial Testing: Design Testing

Setup SOULMATE Initial Testing session 1

Authors: Jaap van der Waerden (TU/E), based on co-creation script by Lex van Velsen (RRD) & Marit Dekker (RRD)

Version: 1.0

Date: 22, 02, 2019

Duration: 130 Minutes

Location: NL, BE, AUT.

Session goals:

- Testing the design of the click-dummy that is made as an example of what the SOULMATE solution could look like.
- Get input on design choices from the end-users, in terms of intuitiveness and attractiveness of the design.

Participants:

- Older adults that are capable of using and evaluating smartphone technology

	What	Who	Time	Material
1	Walk-in		5 min	- Name signs - Coffee & Tea & Cookies - Laptop & Beamer - Large screen/White wall - Pens
2	Introduction initial testing session - Introduction of moderators (- A brief description of the SOULMATE solution and goals could be added, if participants are not familiar with this yet.)		5 min	(Refresher on technologies)



	<p>- Explain goal of the session: To show off some scenarios that the SOULMATE solution could help participants with, and ask for their opinions and suggestions about how the design looks. Think about colors and images of buttons, but also how intuitive the menus and functions are. Stress the value of their input in the design process.</p>			
3	Gather Informed consent (+ use of photographs)		5 min	- Informed consent form with checkbox option for photo use
4	<p>Introduction round participants</p> <p>Please state your name and tell us (or ask on paper):</p> <ul style="list-style-type: none"> - your age - your living situation (alone, with someone else) - How often do you travel within your municipality (to do groceries, to (volunteer) work, etc.) - How familiar you are with smart technology (using a phone or tablet to: Browse the internet, use Whatsapp or Facebook, play games, use navigation) <p>If there are any, stakeholders can introduce themselves by stating their name and their reason for joining the session.</p> <p>Alternative: "Get to know each other game"</p>		10 min	<p>PPT sheet with the three questions (or on paper)</p> <p>Script "Never have I ever"</p>
5	<p>Explanation of the current click-dummy:</p> <ul style="list-style-type: none"> - Talk about what the participants are going to see/do in the scenario; - Explain that the current version is not an actual application but an example; some they can click/tap through options but it is not connected to google maps or anything. 		10 min	

	<ul style="list-style-type: none"> - Explain what the point of the scenario is: In the future, the application should help them explore and travel routes. 			
6	<p>Walk through the first scenario together with the participants. Do this step by step, and make sure that everyone is clear on what is displayed and what needs to be pressed to continue (make sure you have seen all screens beforehand!). All scenarios start from the Home screen (1/28), the number represents the screen of the web-version of the click-dummy.</p> <ol style="list-style-type: none"> 1. Click the green arrow to get to the next screen (4/28). Click “add new destination” to get to that entry screen (5/28). They cannot enter anything at the moment, so just click start to go to the mode choice screen (6/28). Choose to walk which leads to the map screen (13/28). Here, the desired route would be chosen and the trip can start. (/end scenario). Go back to the home screen by pressing the house on top (1/28). <p>Once the first scenario is done, discuss with the participants how it went. Note any interesting things they mention (in Discussion Notes). [this might be a good time for a break]</p> <p>The scenarios that follow are no longer step by step, so you will be able to see whether the functions are intuitive for the participants. Give them some time to figure out what to do, but guide them to the right place before they get frustrated. Take as long as you need for these scenarios and make sure everyone has completed one before you go to the next. There is no need to finish all the scenarios, just see how far you get in the described time. We’ve tried to make sure that they go from easier to more complicated.</p> <ol style="list-style-type: none"> 2. Open the Settings screen (2/28). Nothing is working here yet, so continue to the Tutorial screen (14/28). Read the information and go back to the Home screen. 		60 min	



	<ol style="list-style-type: none"> 3. Use the application to complete a trip home. What is the duration of this example trip? 4. Use the application to start a home trip. After three steps (27/28), try to call an emergency contact (3/28); in the form of person 1 (28/28). 5. Use the application to start a home trip. After two steps (25/28), try to find the way to a restaurant on the way (26/28). 6. Free exploration of other screens. 			
7	<p>Written feedback and discussion</p> <ul style="list-style-type: none"> - Ask participants to fill in the written questionnaire first (individually); - Feel free to let the participants tap through the different screens to find specific things they like or dislike (or show/discuss them plenary) <p>Discuss what the participants think is already looking good, what could use improvement, and their suggestions. Moderate this discussion if required, and try to note the overall evaluation of the functionality and important points that come up.</p> <p>Additionally, we have been requested to look at the function of the SOS button in more detail. Appendices A6 (Dutch) and A7 (German) show two different implementations of this button. Discuss with the participants which of these they would prefer; the SOS button as a panic button (emergency function), or the HELP button as a tool to get more information (when they are lost or stuck, but not panicked or in danger). Please add the general consensus (option SOS or HELP and option EMERGENCY SERVICES FIRST or</p>		30 min	<ul style="list-style-type: none"> - Design Feedback Form (Dutch and German) for the workshop, per participant. - Specific questions forms ((Dutch) or (German)) per participant. - Discussion Notes - Specific SOS button Notes





	EMERGENCY SERVICES LAST) and any useful comments to the discussion notes.			
8	<p>Closure</p> <ul style="list-style-type: none">- Explain the next steps within the Initial Testing process (most likely functional testing with an actual app prototype) and how we will use their input in the project (to keep the end users close and use their valuable input in the design process). We appreciate their input and how they will stay involved in all parts of the development.- Ask if there are any questions/comments- Thank participants		5 min	
Total			130 minutes	



Appendix A3 Design Testing Feedback Form

(Dutch version)

Hoe intuïtief en eenvoudig vindt u het bedienen van deze app?

Scenario 1: Een route plannen

Helemaal niet eenvoudig

Heel eenvoudig

Scenario 2: Instellingen en de help-functie

Helemaal niet eenvoudig

Heel eenvoudig

Scenario 3: De weg naar huis vinden

Helemaal niet eenvoudig

Heel eenvoudig

Scenario 4: Een noodoproep uitvoeren

Helemaal niet eenvoudig

Heel eenvoudig

Scenario 5: Een restaurant zoeken

Helemaal niet eenvoudig

Heel eenvoudig



Wat is uw eerste indruk van de vormgeving van de app?

Scenario 1: Een route plannen

Bevalt me helemaal niet

Bevalt mij heel erg

Scenario 2: Instellingen en de help-functie

Bevalt me helemaal niet

Bevalt mij heel erg

Scenario 3: De weg naar huis vinden

Bevalt me helemaal niet

Bevalt mij heel erg

Scenario 4: Een noodoproep uitvoeren

Bevalt me helemaal niet

Bevalt mij heel erg

Scenario 5: Een restaurant zoeken

Bevalt me helemaal niet

Bevalt mij heel erg

Heeft u nog andere opmerkingen?



Welke elementen in de vormgeving spreken u aan?

Welke elementen in de vormgeving spreken u helemaal niet aan?

Zijn er elementen in de applicatie die u verwarren?

Welke verbeteringen zouden we aan de vormgeving doen?





Appendix B Results closed ended questions

	Country	BE	BE	BE	BE	BE	AU	AU	AU	AU	AU	AU	AU	NL	NL	NL	NL	NL	NL	NL	AVERAGE	STD. DEV.	Average Be	Average AU	Average NL
Screen and sequences	Planning a route	5	5	5	5	5	5	4	3	5	5	4	4	4	5	5	5	5	4	5	4,63	0,58	5	4,3	4,7
	Settings & Help	5	3	5	4	4	5	5	4	5	5	1	3	2	2	4	2	3	4	1	3,53	1,35	4,2	4,0	2,6
	Finding the way home	1	5	4	3	4	5	3	5	5	2	5	4	4	5	5	5	4	5	5	4,16	1,14	3,4	4,1	4,7
	Emergency call	5	5	5	5	5	4	3	5	5	2	5	5	5	5	5	5	5	5	5	4,68	0,80	5	4,1	5,0
	Finding a restaurant	1	4	5	3	4	5	5	5	5	2	5	5	3	5	5		4	5	3	4,11	1,20	3,4	4,6	4,2
																						4,22	1,14	4,20	4,23
Design	Planning a route	5	4	4	5	4	5	5	5	5	3	5	5	4	5	5	5	4	4	5	4,58	0,59	4,4	4,7	4,6
	Settings & Help	5	3	4	4	4	5	5	5	5	3	3	3	3	1	4	5	3	4	4	3,84	1,04	4	4,1	3,4
	Finding the way home	2	4	3	4	4	5	5	4	2	3	5	3	4	5	5	5	4	4	5	4,00	0,97	3,4	3,9	4,6
	Emergency call	5	5	5	5	5	5	5	4	5	5	5	5	5	1	5	5	5	4	5	4,68	0,92	5	4,9	4,3
	Finding a restaurant	4	4	5	4	4	5	3	4	3	5	5	4	3	1	5	5	4	4	5	4,05	1,00	4,2	4,1	3,9
																						4,23	0,98	4,20	4,34



Appendix C1 Results open ended questions

Question 1 Which elements of the design do you like?

BE	Design is sufficient	Overall
	Colorcombination is very good	Colors
	Unchanging frame is good	Fixed frame
	Design is clear	Overall
	De possibilities need to be rolled up	x
NL	SOS button looks nice and is clear	Symbol
	Symbol design	Symbols
	It is clear	Overall
	Colors are clear and good	Colors
	Colors are clear	Colors
	Images are clear	Symbols
	Fresh colors	Colors
AU	Clear functions	Symbols
	calming green color	Color
	the arrangement of the buttons is clear and in the right positions	Button placement
	easy to read without reading glasses	Font size
	easy to read and simple	Font size
	handy	X
	colors: explainable, good	Colors
	well arranged	Button placement
	SOS button fits	X
	coloring	Color
	clear	Overall
	colour	Color
	size of buttons	Button size
	very good idea	X
	font size	Font size
	SOS button on each side	X
	very clear	Overall
	colour selection	Color
	intermediate destinations (restaurant, taxi)	X
	indicates whether you have selected on foot or by car	
easy to use	Overall	
street-view is very practical	Overall	

Appendix C2 Results open ended questions (cont.)

Question 2	Which elements of the design don't you like?	Category
BE	Screen is too busy	Too much info
	Too much update (pictures)	Too much info
	Battery usage	X
	Streetview is rather busy	Too much info
NL	On phone everything is too little to see	Button size (too small)
	at Google Maps = Arrow would suffice	Number of arrows
AU	instead of "DANN"(German) something more international would fit better	Wording
	printout of arrows	X
	buttons too small	Button size (too small)
	typing is too juvenile	Wording
	the tutorial is not easy to read (without glasses)	Font size (too small)
	keyboard is too small	keyborad (too small)
	too many different settings	too much info
	POI buttons could be bigger	Button size (too small)
	POI: less is more	Too much info
	the arrows in the map lead to confusion	Number of arrows
	SOS button is too big and below right it disturbs the image	Button size (too big)
	the arrows in the map could be more luminous	Contrast
	time or path length specifications are too large	Button size (too big)
	wallpaper on the main page	Wallpaper
	symbols	Symbol meaning
	color	Color
	contrast	Contrast
	SOS button (I would like to call my own responsible body, no rescue/ambulance and no private person)	X
	setting icon is too small or generally hard to find	Button size (too small)
	WC symbol is not self-explanatory	Symbol meaning
	icons at target selection look like you have to choose how to get there	x
	from the SOS button you cannot return to the main screen	x
	with the SOS button you get help with the Home button	x

Appendix C3 Results open ended questions (cont.)

Question 3	Which elements confuse you?	Category
BE	The fact that the application offers multiple routes (in blue and light blue) is not clear. The alternative, light blue routes were not detected by our participants	Multiple routes
	Star symbol, info	Symbol meaning
	I don't know beforehand how much time I need	X
	Battery symbol	X
	Looking for a Taxi, toilet or car is confusing	How things work
NL	Not clear what symbols mean	Symbol meaning
	the I for information is confusing	Symbol meaning
AU	Settings are not clear	How things work
	the house symbol at your reached destination; reminded a bit to the Acropolis possibly a cross as a symbol for church	Symbol meaning
	in the tutorial the "i" is not on the upper right corner	Symbol meaning
	possibly the use of the arrows to get ahead	How things work
	the meaning of the arrows	Symbol meaning
	the button click area	x
	hang up/call emergency contacts is unclear	How things work
	the arrows in the map, there are too many	Multiple routes
	alternative route should be asked at the beginning and no longer appear in the map	Multiple routes
	the arrow in a circle	Symbol meaning
	the symbol next to the map, what is it	Symbol meaning
	the arrows in the map, there are too many	Multiple routes
	alternative route should be asked at the beginning and no longer appear in the map	Multiple routes
	distance display	distance display
	speed indicator	speed indicator
too many arrows	Multiple routes	
only 1 restaurant is displayed	X	
info button - unclear what the button stands for	Symbol meaning	
call contact person - yellow button is confusing (calling or hanging up?)	How things work	
wiping is very confusing	x	

Appendix C4 Results open ended questions (cont.)

Question 3	What could be improved on the design?	Category
BE	Too much info is displayed	Less info
	Color of arrow more clear	Color
	In case of unexpected events, recalculated duration	More info
	Display time remaining on route	More info
	Reverse route (other direction)	Options
	Voice input	Options
	Symbols of POI bigger	Symbol size (bigger)
	include phone number at restaurant info	More info
	Respect privacy	x
NL	Speech	Options
	If I practice I will figure it out	X
	More SOS options	Options
	Symbols bigger	Symbol size (bigger)
AU	Symbols bigger	Symbol size (bigger)
	Help/SOS must light in red	Color
	the writing of the text in the screen "interesting goals" should be more high in contrast	Contrast
	we could write distances (e.g. The desired destination is 200m away)	Options
	improve typing (time too short)	Time for input
	enable additional voice input	Options
	message/signal: app is 'in function' (in case you start any function without purpose)	Options
	"Persons" real photo	Options
	you should be able to change whether you are left- or right-handed	x
	larger/fewer headings	Less info
	buttons larger and either left or right	Symbol size (bigger)
	POI larger	Symbol size (bigger)
	POI: pharmacy, doctors, nearest shops, post office	Options
	SOS should be changed in Help and should be visible in the upper right corner	X
	WC symbol should be more understandable	Symbol meaning
	restaurant: select which restaurants and then time/route information	Less info
bank or POI's in the left column at map	Options	
weather should also be displayed	Options	
other image as background at the start screen (choose one yourself?)	Options	



you should be able to call the fire brigade of police and not just the rescue/ambulance	Options
you should be able to save other fixed targets	Options
it all fits	x

